***CLASS COPY. DO NOT WRITE ON!***

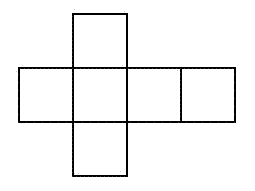
CW#83 Surface Area of Prisms and Cylinders

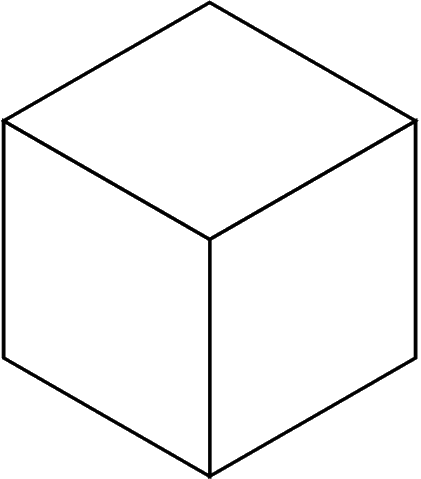
Geometry

**Exploration #1 – Surface Area!**

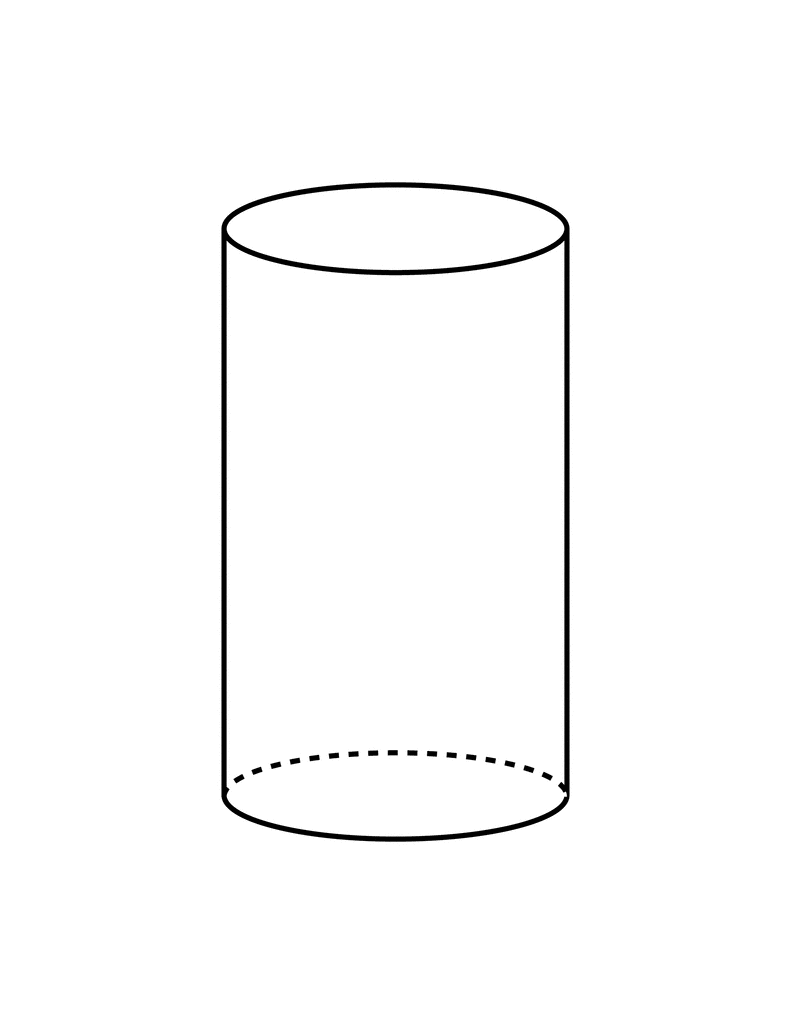
EXPLORATION:

Draw the following shapes in their 2-Dimensional form

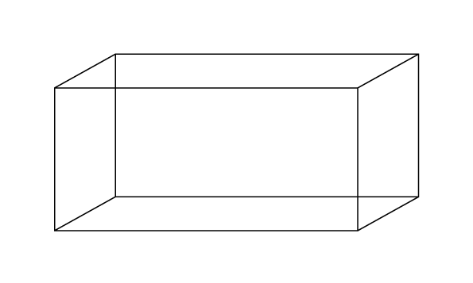
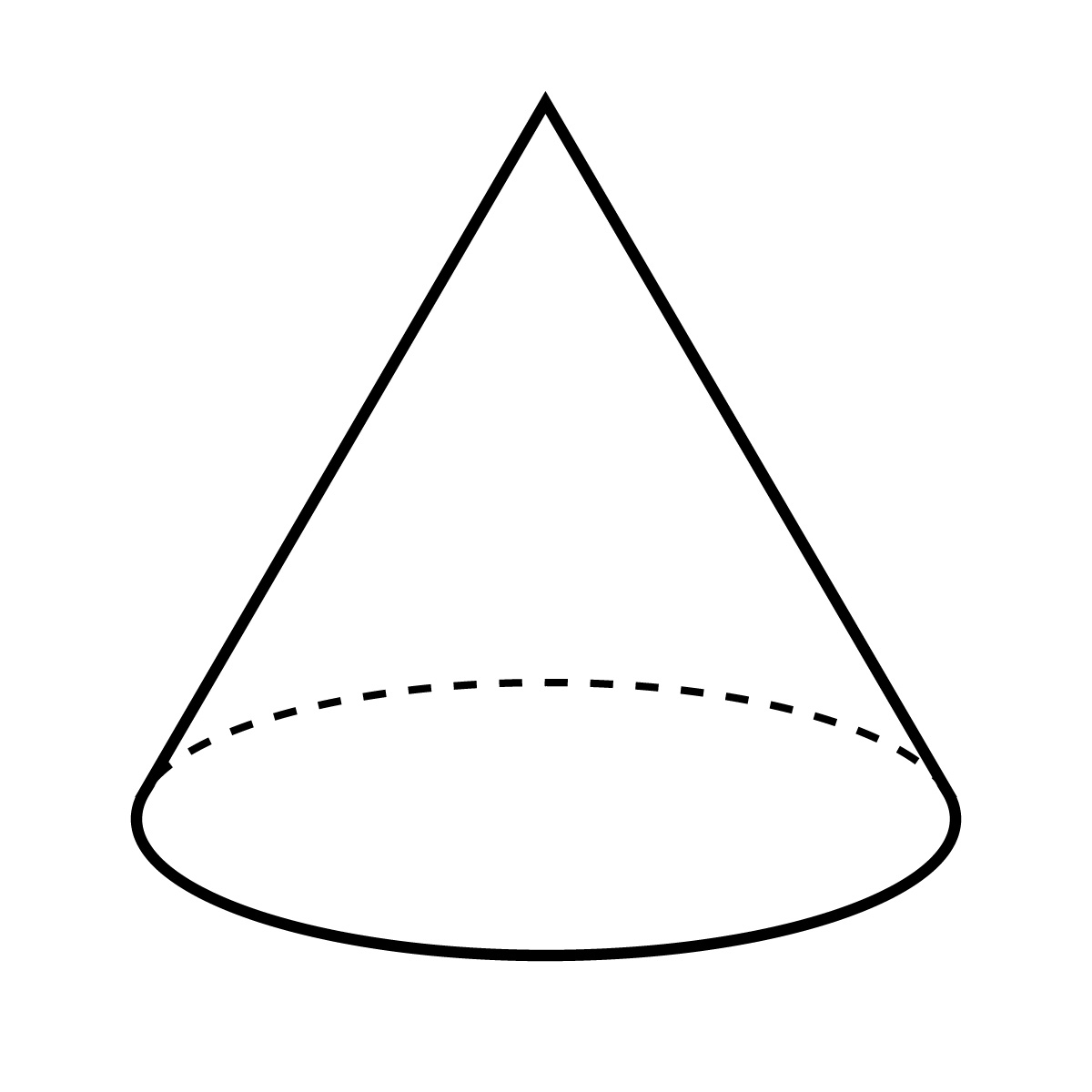
EXAMPLE:



CUBE (3-D) FLATTENED CUBE (2-D)



#1) CYLINDER #2) RECTANGULAR PRISM #3) CONE (IF YOU HAVE EXTRA TIME)



1) What is surface area? Is surface area the same as volume? In your own words, how do you calculate the surface area of an object?

~IN YOUR NOTEBOOK~

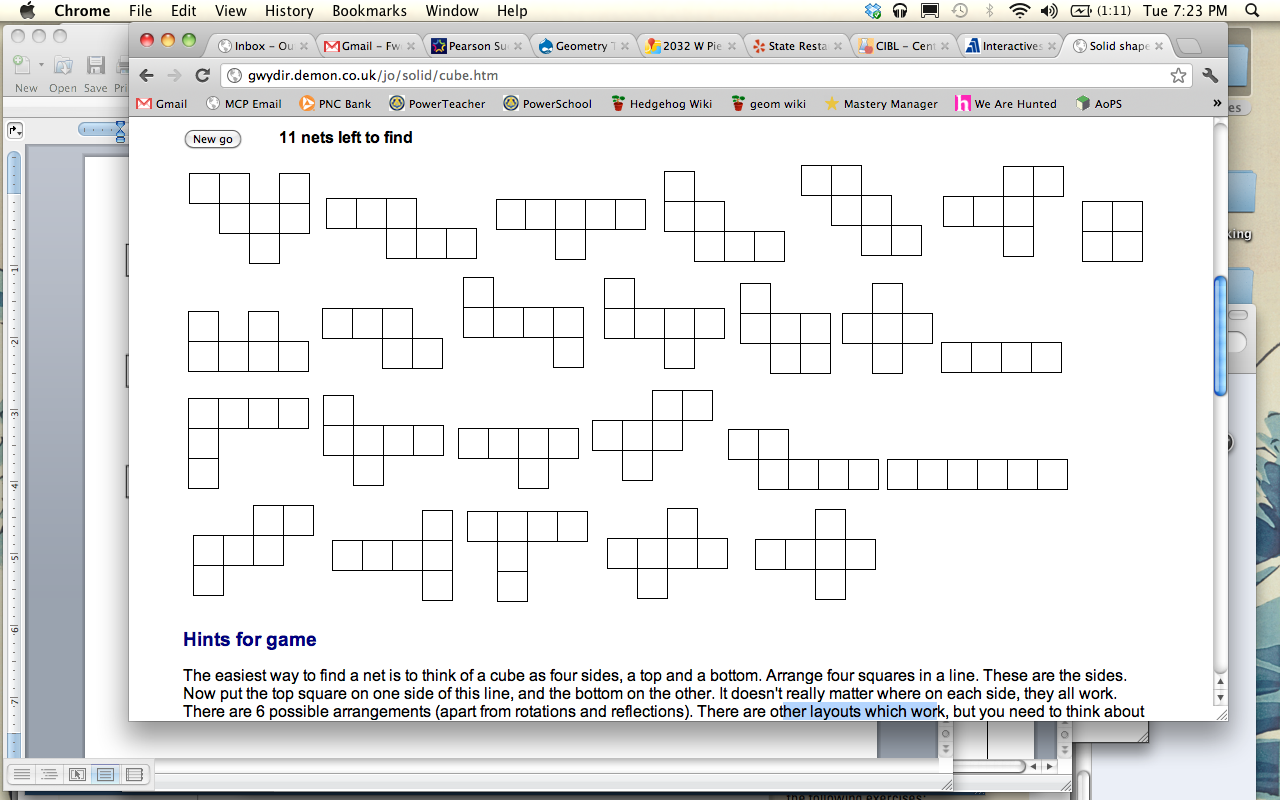
|  |  |
| --- | --- |
| **Rectangular Prisms:** | |
| 5) ***Describe*** how would you find the surface are of the following. Calculate the surface area. Is there a formula?      Formula? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 6) Create ***two*** ***different*** rough sketches of nets for a rectangular prism to the left. Find the area of each face, and the surface area of each net. Is this the same as the calculations that you made to the left? |

|  |  |
| --- | --- |
| **Right Cylinder** | |
| 7) ***Describe*** how would you find the surface are of the following. Is there a formula?    Formula? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 8) Create ***two*** ***different*** rough sketches of nets for a right cylinder to the left. Find the area of each face, and the surface area of each net. Is this the same as the calculations that you made to the left? |

**Exploration #2: Nets!**

1) What is a net?

2) There are eleven different ways to make the net of a cube, apart from rotations (turn it round) and reflections (turn it over). Try to catch them all! (Yes, that is a Pokemon reference).



3) Describe the characteristics of the net of a cube. Did you notice any patterns? Did you eliminate any nets? Why?

4) Next, you will choose one net design above and create a cube! Here is one of them as an example:

|  |  |
| --- | --- |
| Make your own! | **Steps:**  1) Scale it up to the size you want (just make sure it fits on one piece of graph paper!)  2) Put a tab on every other edge for gluing it together.  3) Trace your net onto construction paper (Ordinary graph paper will be fragile!)  4) Cut it out carefully. Write your name on the outside of the net so that it will be visible after you assemble it.  5) Use a pen or pencil to go over all lines in the design, including the tabs. Now fold the paper to make right angles, and you will see the cube start to appear.  6) Use small dabs of glue or a glue stick.  7) What is the area of one face of your cube?  8) What is the surface area of your cube?  9) What is the volume of your cube?  10) For fun: How many cubes in a Rubiks cube? |

**Practice Problems:**

|  |  |  |
| --- | --- | --- |
| 1) Find the surface area of the solid formed by the net. Round your answer to two decimal places. | 2) Find the surface area of the solid formed by the net. Round your answer to two decimal places. | 3) Find the surface area of the right prism. Round your answer to two decimal places. |
| 4) Find the surface area of the right cylinder using the given radius *r* and height *h*. Round your answer to two decimal places.  *r* = 5 cm; *h* = 15 cm | 5) Find the surface area of the right cylinder using the given radius *r* and height *h*. Round your answer to two decimal places.  *r* = 12 in.; *h* = 18 in. | 6) Solve for *x* given the surface area *S* of the right prism or right cylinder. Round your answer to two decimal places. *S = 320m2* |
| 7) Solve for *x* given the surface area *S* of the right prism or right cylinder. Round your answer to two decimal places. *S* = 1000 cm2 | 8) CHALLENGE: Find the radius of a right cylinder with a surface area of 48π square feet. The height of the cylinder is 5 feet. | 9) As a birthday present for a friend, you buy a cylindrical box of candy. The diameter of the box is 6 inches and the height is 8 inches. What is the minimum amount of wrapping paper needed to wrap the gift? Round your answer to two decimal places. |